

BUSINESS TRANSFORMATION SERVICES - INDIA

AUTONOMOUS SUPPLY CHAIN: 10 KEY ENABLERS



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An autonomous supply chain refers to a sophisticated ecosystem that leverages cutting-edge technologies and data-driven strategies to create a self-operating and self-optimizing network. This approach integrates various elements, such as real-time data monitoring, predictive analytics, robotics, AI and advanced communication systems, to streamline and enhance every facet of the supply chain process. By minimizing human intervention and maximizing the utilization of technological advancements, an autonomous supply chain aims to efficiently manage inventory, production, distribution and other critical processes while swiftly adapting to changes in demand, disruptions and market dynamics.

In India, a country with a diverse and complex supply chain landscape, embracing the concept of an autonomous supply chain can lead to improved efficiency, responsiveness and overall competitiveness in a rapidly evolving market environment. Explore 10 key enablers for an autonomous supply chain, below:

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Real-time Data Monitoring and Analysis

Real-time data monitoring involves the continuous collection, transmission and analysis of sensorgenerated data with the business process and variations expected.

Example: Temperature and humidity sensors in an Indian pharmaceutical warehouse capture data every 10 seconds. Alerts are triggered if the temperature captures 25 C (77 F) or humidity surpasses 60 per cent.



Demand Sensing

Demand sensing utilizes machine learning algorithms to analyze real-time point-of-sale data and social media interactions, detecting shifts in demand patterns with a sensitivity threshold of 95 per cent accuracy.

Example: A consumer electronics manufacturer in India employs sentiment analysis on Twitter data to detect shifts in demand for smartphones with an accuracy of 90 per cent.



Automated Warehousing and Logistics

Automated warehousing employs robotics with pathfinding algorithms to perform material handling tasks with a precision of ± 5 millimeters.

Example: In an Indian logistics center, robots equipped with LiDAR sensors navigate through aisles with a positional accuracy of ±5 mm. This ensures efficient order picking and minimizes collision risks.





Predictive analytics employs historical data sets and advanced algorithms to forecast future trends and events with accuracy, within a range of ±5 per cent, asmeasured by Mean Absolute Percentage Error (MAPE).

Example: An Indian e-commerce platform utilizes a time series forecasting model to predict Diwali demand for specific product categories. The model's MAPE of 8 per cent indicates reliable predictions within a 5 per cent range.



45 to 60 days.

Inventory Management

Inventory management optimizes inventory turnover, measured by the Inventory Turnover Ratio (ITR), which aims to maintain an ITR between six to eight, indicating products sell on average every

Example: A textile retailer in India employs an Al-powered system to maintain an ITR of seven, indicating products sell on average every 52 days. The system adjusts reorder points based on historical sales patterns.



Supplier collaboration employs blockchain technology for secure data exchange, ensuring transparency in supply chain processes with data accuracy validated within a range of 99.5 per cent to 99.9 per cent.

Example: An Indian automotive manufacturer utilizes blockchain to share production plans with suppliers, ensuring data integrity with validation accuracy ranging from 99.5 per cent to 99.9 per cent and real-time synchronization.



Supply Chain Resilience

Supply chain resilience quantifies resilience as the Mean Time to Recovery (MTTR), aiming to restore operations within an average time of four to eight hours after a disruption.

Example: Heavy rains disrupt a transportation route in India. An AI-driven platform calculates the MTTR to be six hours, considering alternative routes and minimizing delivery delays.



Cost efficiency calculates the Cost-to-Serve (CTS) ratio, comparing the cost of order fulfillment to revenue generated, aiming for a CTS ratio of less than 0.2 for optimal efficiency.

Example: A food processing company in India adopts robotic automation, achieving a CTS ratio of 0.18, indicating efficient order fulfillment relative to revenue within the target range.



Reduced Lead Times



Lead time reduction measures the percentage decrease in lead time compared to a baseline period, aiming to achieve a reduction of 15 per cent to 20 per cent.

Example: An Indian apparel manufacturer reduces lead times by 18 per cent using RFID technology and successfully achieving a reduction within the targeted range.



Continuous improvement employs the Plan-Do-Check-Act (PDCA) cycle to iteratively enhance supply chain processes, with Key Performance Indicators (KPIs) showing consistent improvement of 10 per cent to 15 per cent over quarters.

Example: An Indian pharmaceutical firm uses PDCA cycles to optimize manufacturing and distribution processes, leading to a 12 per cent improvement in On-Time Delivery (OTD) KPI over the past year within the targeted range.

A Beneficial Business Strategy

In conclusion, embracing an autonomous supply chain in India offers a myriad of benefits that can transform the way businesses operate in the modern era. By harnessing real-time data analysis, predictive capabilities, automation and seamless collaboration, organizations can achieve higher efficiency levels, reduced operational costs and enhanced customer satisfaction. The ability to respond proactively to demand fluctuations, mitigate disruptions and optimize resource allocation leads to increased agility and resilience. As India's supply chain ecosystem continues to evolve, adopting an autonomous approach can position companies at the forefront of innovation, enabling them to thrive in an ever-changing landscape while delivering exceptional value to their customers and stakeholders.

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